NEWS

Study clarifies Arctic impacts on British winters

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A Met Office-led international study is helping to quell a long-running scientific debate about how the ongoing decline of Arctic sea ice, driven by climate change, can affect UK winters.

Some previous studies - based only on observations - have suggested that the melting Arctic could lead to more severe UK winters by weakening mid-latitude westerly winds. But this relationship cannot be established from observations alone, and previous studies based on climate models were inconclusive, leading to the long-running debate.

To address this issue a large international initiative to run coordinated modelling experiments was launched.

With 16 different international climate models and more than 3000 individual simulations, the results provide the most robust assessment to date of Arctic impacts on UK winters. The paper 'Robust but weak winter atmospheric circulation response to future Arctic sea ice loss' is published today (Monday 7 February 2022) in the journal Nature Communications.

The Met Office's Dr Doug Smith is the paper's lead author. He said: "Our study does show a robust weakening of the prevailing westerly winds driven by the continued decline of Arctic sea ice, but this effect is weak when compared with year-to-year variability. In other words Arctic sea ice is unlikely to drive a single severe winter or to outweigh the long-term warming from greenhouse gases."

The study also finds that observed relationships between Arctic sea ice and UK winters are weaker when the latest observations are included, reconciling previous differences between observation and modelling studies

The findings maintain consistency with headline results from UKCP18 suite of climate projections that indicates that winters will on average be milder and wetter in future.

The project to coordinate climate model experiments is the Polar Amplification Model Intercomparison Project (PAMIP). It is co-led by the Met Office and is endorsed under CMIP6 - the major international climate modelling initiative informing the latest IPCC assessment.

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